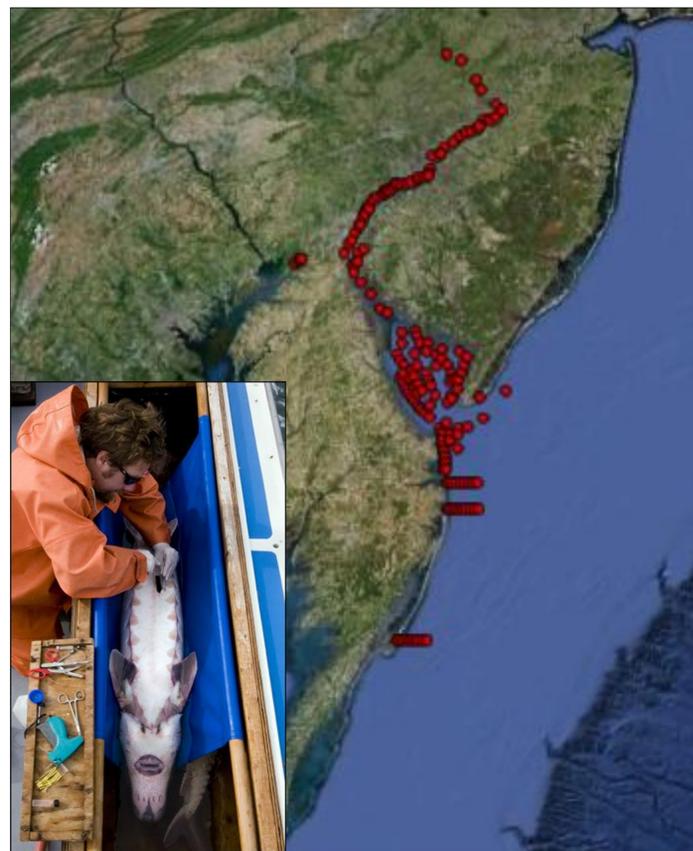


Problem

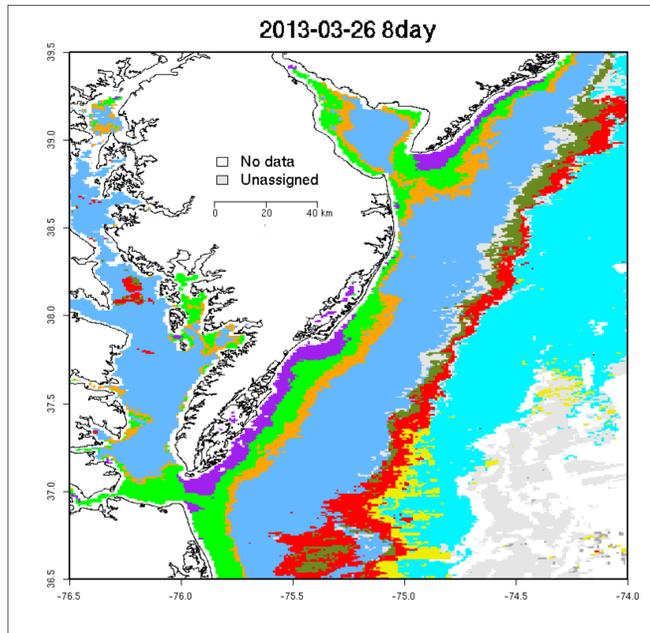
- Atlantic Sturgeon populations declined in the late 19th century due to over fishing and subsequent habitat degradation
- Lack of recovery forced the listing of Atlantic Sturgeon under the Endangered Species Act in 2012
- Understanding of many life history stages is currently limited, especially in the marine environment where the majority of time is spent
- Large coastal migrations make Atlantic Sturgeon vulnerable to anthropogenic impacts and difficult to study
- Potential impacts not only threaten Atlantic Sturgeon but may also place unnecessary burdens on fisheries and industry
- The development of near real-time distribution models for Atlantic Sturgeon will not only ease the pressure on Atlantic Sturgeon but may also lessen the impact the ESA listing has on fisheries and industry.

Traditional Biotelemetry



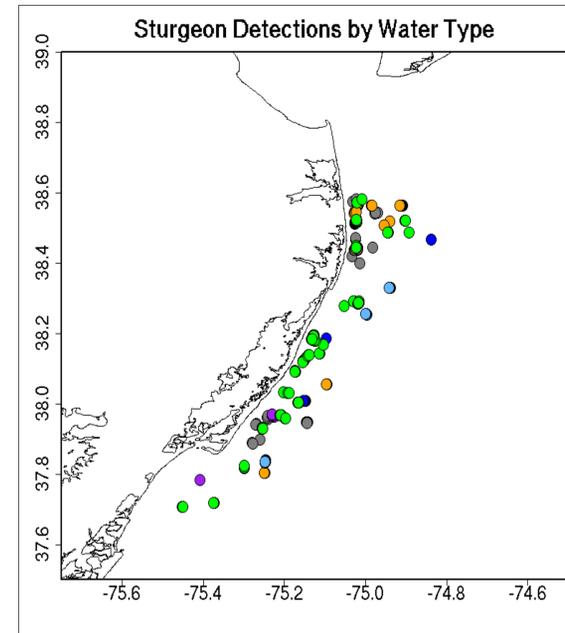
-Since 2009, we have implanted VEMCO acoustic transmitters (battery life > 6 years) in over 250 adult Atlantic Sturgeon and monitored their movements through an extensive passive acoustic array consisting of 160 acoustic receivers in the mid-Atlantic. Receiver locations shown by the red circles.

Satellite Derived Water Types



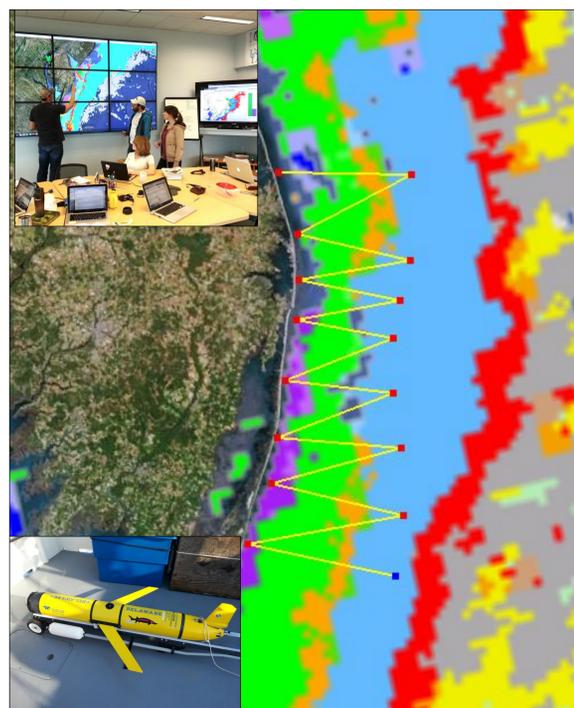
-Utilizing ocean color data from MODIS Aqua we identified several common water types (Oliver and Irwin 2008) in the coastal ocean and near-shore waters of the mid-Atlantic. The figure above is an example 8 day rolling average water type map for March 26, 2013.

Water Type Preference



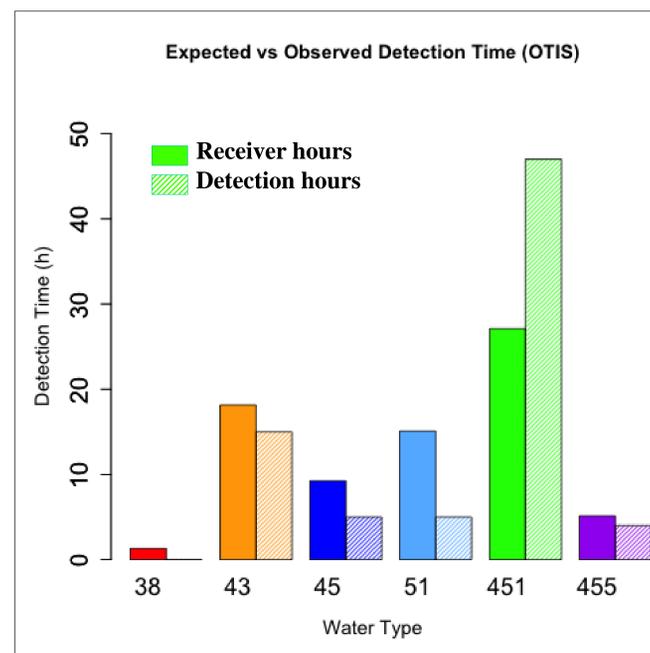
OTIS spent 79 Days at sea (April 10 – June 28) and travelled 1420km, and completed 71,000 profiles of Salinity, Chlorophyll, CDOM, Temperature, Oxygen. OTIS detected 62 Sturgeon with 187 total detection hours.

Mission Path



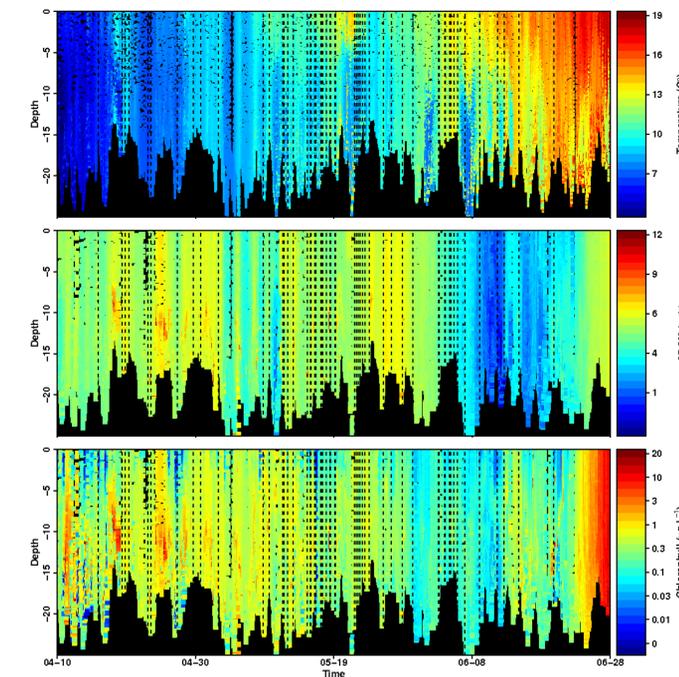
Planned OTIS route for the first leg of the mission to test **the HYPOTHESIS that adult Atlantic Sturgeon are preferring particular water types during their spring coastal migration in the mid-Atlantic.**

Water Type Preference



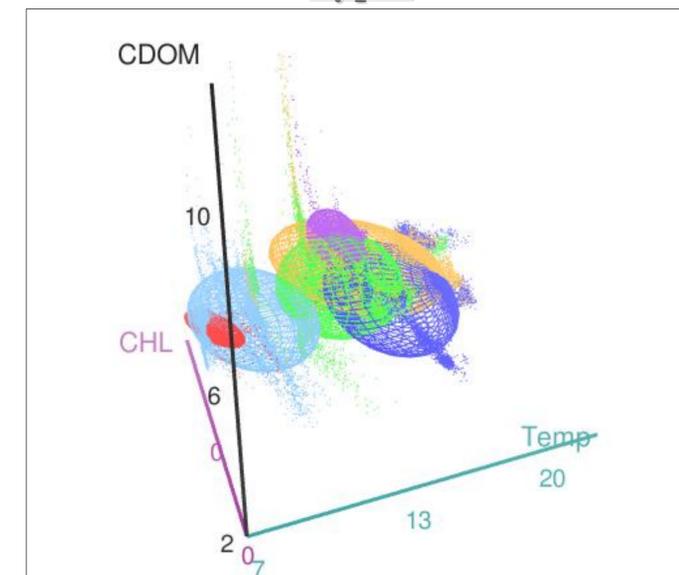
By matching traditional telemetry results with 8 day averaged water types we identified habitat associations of Atlantic Sturgeon. The figure depicts preferred and avoided water types from April to June, indicating a preference for water types represented by green and purple.

Glider Profiles and Sturgeon Detections



In-situ glider profiles with sturgeon detections (dashed lines) show how detections relate to in-situ water quality.

In-Situ Characterization of Water Types



Water types characterized by *in-situ* temperature, CDOM, and chlorophyll measured by the glider

Acknowledgements: This research is supported by NASA Biodiversity, NOAA NMFS, Office of protected Resources, DuPont CITE, as well as a generous private donor. We would also like to thank MARACOOS, and the Rutgers COOL Group for their glider expertise and piloting.